Now anthropology steps in, the new Science of Man, offering the knowledge of what he has been and is, the young but wise teacher, revealing the future by the unwavering light of the past, offering itself as man's trusty mentor and friend, ready to conduct him by sure steps upward and onward to the highest summit which his nature is capable of attaining; and who dares set a limit to that?

This is the final aim of anthropology, the lofty ambition which the student of this science deliberately sets before himself. Who will point to a worthier or a nobler one?

Daniel G. Brinton.
University of Pennsylvania.

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*THE PROVIDENTIAL FUNCTIONS OF GOVERNMENT WITH SPECIAL REFERENCE TO NATURAL RESOURCES.**

It is with considerable hesitation that I undertake the duty which you have seen fit to impose upon me, namely, of addressing you in a representative manner on a subject of Economic Science. For I may not claim to be an expounder of its laws, although engaged in its practical application; much less do I pretend to be a representative of the science, if science it be.

This doubt alone, whether there is as yet such a thing as economic science, should unfit me for my present position before you, who have chosen this field of human inquiry as your specialty and hold it, I presume, as correlated with equal value to all the other sciences established as such.

But even conceding the right to such a correlation which I know is maintained practically by the most eminent men, I am still inclined to doubt the propriety of the title which is applied to this section of the Association for the Advancement of Science, for I conceive that the intention could not have been to single out for representation in the great concourse of sciences one portion and one method of the greater separate field of inquiry, but that the title of Economic Science was in reality supposed or intended to be inclusive of all those branches of knowledge which deal with the phenomena of political, commerical, economic and social life of mankind, and which might be comprised in the all-inclusive name of Social Science, Anthropology in Section *H*, forming its historical or descriptive part.

At least since this section *I* was formed, if not before, it has been recognized that political economy, or economics, was only a branch of a larger science, the science of the social biology of man, and that this branch could not be satisfactorily developed for any length of time without reference to and without an equal development of all other branches of the system. Hence to be abreast with the times, at least in classification and nomenclature, we should rechristen this Section to be the Section of Social Science, which to my mind would assign it its proper place in the concourse of sciences represented in the Association. Social Science would then have to determine the forces and laws and to explain the phenomena of social life, and finally, as applied social science, to direct the development of the political, economic, commercial and social intercourse of man; these four aspects of social life being all inclusive and at the same time so differentiated as to admit of their more or less separate study and largely, never entirely, independent development.

Perhaps I owe you an explanation, if not an apology, for my doubt as to whether we are *as yet* justified in classing this branch of knowledge as a science. This doubt, which I notice is shared by others, has arisen from the observation that the discussions in this field are still progressing to a very large ex-

* Address of the Vice-President, Section I, American Association for the Advancement of Science, at the Springfield Meeting, August 29, 1895.

tent on *a priori* reasoning, instead of *a posteriori*, as true science demands. The scientific method of procedure is too often neglected.

It seems that as yet both writers and practitioners rely more upon proposed working theories than upon discovered laws, and hence we find the economists divided into camps and schools, differing in the most fundamental principles; partisanship, preferences, bias of education, personal opinion, sentiment, dogmatism, rather than facts, truths, and natural laws, predicating unalterable consequences, are at the very foundation of the superstructure.

All science, to be sure, requires working theories as methods for further development, and in these there may be differences of conception which lead to diversity of opinion as to the probable truth, such as the dynamic and fluid theory of electricity, the undulatory and corpuscular theory of light. But these theories are the scaffolding outside of the unfinished building, not the foundation that is placed on broad unalterable law, on facts observed, which can be tested, and it is the organized and related condition of these facts and laws, their 'cause and effect,' interdependence, their structural aggregation which gives to the building its name and character of 'Science,' although the building may not yet be, never is to be, finished.

Do we have such a substructure and sufficient foundation walls for social science, or even for that part which has been most developed, Political and Economic Science, to deserve its appellation, or is it only a scaffolding from which to work in the erection of the building with a few isolated foundations of some of its walls, not too firmly placed and often lacking connection and mutual support?

Is not even the plan of the building so ill understood that the masons on each of the four walls have worked independently, without reference to what the whole is to be, and some of them think that they are building an independent and separate structure instead of an integral part of the whole; so that, for instance, the worker on the economic side is jealous of and quarreling with the sociologist? (*Vide* Discussion in the latest Proceedings of Am. Economic Association.)

It was not, however, my purpose to carp about names and classification, although I believe that proper nomenclature and classification assist greatly in advancing science; or to quarrel with the builders, except to warn them against dogmatism, which is unscientific, and against narrow conceptions of the sphere of their work, which is detrimental to its efficiency. I wish to emphasize that foundations are still needed on which to erect the building of social science and mutual supports for the walls, that have hitherto been left to stand independent; that the forces and stresses need to be more carefully calculated and their direction determined with more precision before the building may satisfactorily proceed. Finally, I desired to use this occasion for calling the attention of the workers on this building to the advantages they could derive for their fundamental work in this Association, which affords intercourse with the workers in other biological sciences, an advantage which the student of Social Science cannot afford to neglect.

While thus I desire to emphasize the advantages that come from such association, it will be part of my theme to point out the danger and impropriety of considering the social development of man as closely analogous to, nay, as of the same order as the biological development of plant and animal, an impropriety which is perpetrated by that school which has potently influenced economic thought for many decades, known as individualists, with Herbert Spencer as their most powerful exponont.

The revolution, which the fascinating philosophy of Darwin has brought into the manner of contemplating and explaining the life and development of plant and animal world, has with these men asserted itself in their manner of contemplating and explaining man's life. To be sure the same forces which determine the progress of development in plant and animal world are also active in the human world. We may easily agree that the same means employed in their struggle for existence, namely: selection, rejection, competition and adaptation, are also means which aid in the perpetuation, development and improvement of the human race, or its better adaptation to the conditions of existence.

So far as the simple *biologic* development of man is concerned, this may readily be conceded; and even in *social* development these forces were perhaps alone at work in the earliest history of mankind, when it just emerged from the state of mere brutishness, and are the only ones in some portions of it even now. But if we content ourselves to accept these same forces and means as the only ones now at work in shaping *social* development, we shall fail in understanding, explaining or directing that development. The two qualities by which the human individual differs from the brute, the head and the heart, the intellect and the soul, the reason and the emotions, feelings, affections—breeding the one wisdom, and the other character, the one directing, the other impelling action—have had, and will in future have still more influence upon the social development of the race. It is the existence and powerful influence of these two factors, these additional variables, in the social development, that have rendered its analysis so difficult, and that have kept our knowledge of human affairs from becoming an exact science sooner.

We do not deny the existence of the germs of these two qualities and occasional exhibition of the same in the animal, but the capacity of developing them, as far as we know, is possessed by man to such an infinitely greater degree as to approach difference in kind.

With these two qualities two new aims were added to those which man has in common with the rest of living creation, namely, to secure the development of these two qualities; but, what is more important in his social development, they lead him and enable him to interfere with the working of the natural laws of physical development, to give direction to that development without the necessity of the struggle for existence as motive, and to even influence and transform the conditions of existence, which necessitated the struggle.

These qualities develop, however, only in society to such a degree as to become the moving force of further social progress. Associated effort has bred and fed them. At first probably the same instinct that moves the ants and bees and other animals to association was alone active in man, but as these two qualities developed by application they became the directive forces both of individual and social effort, and became stronger than the mere biologic forces.

Not that thereby human development becomes a 'bewildering exception to the reign of universal law'—a kind of solitary and mysterious island in the midst of the cosmos given over to strife of forces without clue or meaning; for morals and reason also develop under laws, but the development becomes more complex, a function of more variables, a result not of physical, but psychic forces as well, and of rational deliberation.

If the progress of man in his higher social development had relied on biologic forces alone, it is not likely that he would have exceeded the stage in which we find the lowest savages, who, with all the faculties of higher man latent, and the biologic laws

almost alone active, remain on the plane of the animal.

To quote Professor Joseph Le Conte: "I have from time to time shown that there are certain limitations to the application of the doctrines and methods of biology to sociology—that in every case such limitation is the result of the introduction of some new principle characteristic of *humanity* as distinguished from *animality*, of *reason* as distinguished from *instinct*."*

And Lester F. Ward, after careful analysis, goes so far as to state rather strongly: "that the whole farrago which has so long passed for political economy is true only of irrational animals and is altogether inapplicable to rational man."†

Whatever value then all the other evolutionary, biologic forces pure and simple, have had in the *animal* development of man, in the *social* development, in the progress of moral and material civilization, the feelings, emotions or affections have played a much more important part, which has generally been greatly undervalued, until Lester F. Ward, in his Dynamic Sociology, and again in his Psychic Factors of Civilization, called forcibly attention to this fact. He recognizes these, however, only as dynamic forces, without direction, conceding to the intellect alone the power of direction. I am not prepared to deny altogether direction to the emotions, just as the force of gravity is both dynamic and directive. I am inclined to keep these two exhibits of the human mind distinctly and separably as two social forces of unequal value and direction, giving to the emotions the highest value in the past, to the intellect a more and more increasing importance, and modifying the direction of the former. At any rate we shall have to agree that the emotions have had and have the largest share in shaping men's civilization, and the recognition of this fact will appear as important with regard to the subject I have proposed to discuss.

Neither the individualists nor the socialists have recognized this notable fact which history develops at every step. The latter, *i. e.*, the *rational* socialists, in their plans of improvement of social conditions, fail to take account of it as well as of the biologic factors. They propose to hasten the millenium by making coöperation compulsory and reason rule supreme, suppressing the *individual* as in a colony of ants, each existing only as a part of the whole.

The individualists, on the other hand, desire to let our progress depend or to shape itself entirely under the working of the natural law of competition, suppressing as far as possible the *organization* which has served to develop the moral and intellectual forces, in fact they propose to reduce us as far as possible to the conditions of the brute world. They expect, to be sure, but with what right it is difficult to see, that the individuals will as such, independently of society, develop the social instinct, will desire the common good even at the expense of his own good, and finally, will seek voluntarily coöperation as a result of superior intelligence. And they claim that he will do so sooner and with less friction if let alone. It is not very clear why such a result should occur, how the free exercise of competition is to produce coöperation, which is its very antithesis. "Coöperation," as Ward states it, "always tends to reduce competition, and competition denotes want of coöperation;" and he further points out that the seeming coöperation as a result of competition is in reality only competition between corporations or classes, but in no sense the coöperation which establishes the same aims in all members of the society.

"We are told," says he, "to let things alone and to let nature take its course. But has intelligent man ever done this? Is

* Pop. Sci. Mo., Feb., 1879, p. 430.

† Psychic Factors. Ward. P. 279.

not civilization itself, with all that it has accomplished, the result of man's not letting things alone, of his not letting nature take its course?"*

In other words, the whole difference between civilization and other forms of natural progress is that it is a product of art, of artful coöperation; and this coöperation has been coerced rather than voluntary, coerced first by the few, and, as intellectual and moral forces developed, by the many.

And now we are asked to give up the advantage of this coöperation, laboriously developed, to return to the beginning as far as that is possible; and for what?—to experiment, and see whether the individual if left alone to the laws of competition would not again develop coöperation, which after all even the individualist admits with chagrin is preferable to competition.

To quote Ward again: "Competition not only involves the enormous waste, which has been described, but it prevents the maximum development, since the best that can be obtained under its influence is far inferior to that which is easily obtained by the artificial, *i. e.*, the rational and intelligent removal of that influence. Hard as it seems to be for modern philosophers to understand this, it was one of the first truths that dawned upon the human intellect. Consciously or unconsciously, it was felt from the very outset that the mission of mind was to grapple with the law of competition and, as far as possible, to resist and defeat it. The iron law of nature, as it may be appropriately called, was everywhere found to lie athwart the path of human progress; and the whole upward struggle of rational man, whether physical, social or moral, has been with this tyrant of nature—the law of competiton—and in so far as he has progressed at all beyond the purely animal stage he has done so triumphing little by little over this law and gaining somewhat the mastery in the struggle."*

The individualists who expect better success from the purely animal method have been led by the undeniable fact that, in many respects, governments have failed to perform their functions well, although even in this respect fair investigation will show that, considering the conditions and the general limitations of men, this stricture cannot be sustained to the degree that may at first glance appear to the casual observer. Now, instead of improving the methods of government, they propose to curtail the functions; instead of giving direction to the social forces—which will not be downed—they propose to neglect them, to substitute the biologic forces.

Just as the chemists, who are attempting to determine dietaries and construct universal soups by chemical synthesis, overlook the existence and claims of the palate, catering alone to the stomach, so the individualists and many economists deal with man as a machine of a given physiological construction and put in motion by physiological forces, overlooking that psychological forces are his main motive power, 'that he is to be lured, not pushed, in the way of productive effort,' or, at least, that however far for his animal development the laws of animal biology, the laws of nature, may be allowed to prevail for his truly human development, the laws of mind, and especially of heart, must and will interfere. In this development, not competition, but coöperation, is a necessity.

This rather lengthy reference to that school of sociologists whose motto is the reduction of the functions of government, who have so strongly influenced and still continue to influence, not only thought, but government activity, appears necessary, whenever we desire to discuss government functions, for whether we subscribe to the

* Psychic Factors, Ward, p. 286.

* Psychic Forces, Ward, p. 261.

views of the *laissez-faire* school, or to those of what we may call in contradistinction the *faire-marcher* school, the discussion will take a different turn.

Between the socialist and the individualist stands the true democrat, in whose creed society, the demos, stands recognized as the supreme ruler with ideals of progressive civilization as the goal of associated effort, giving all liberty possible to individual activity that does not interfere with the good of society. That good he believes to be the moral and intellectual development and material comfort of all its members, present and future, and he believes that it is attained not by negative, or merely restrictive methods, but by positive, active methods; ameliorative, or coercive, whenever the interests of society, present or future, would suffer by non-interference with individual activity or neglect. The functions of his government lie wherever coöperation of the whole will accomplish the end aimed at by society better than individual effort, avoiding interference where individual effort suffices to obtain the end of society; above all, he does not consider government as an evil and outside of himself, but as a good created by himself for the attainment of his highest human ideals, and furthermore, he always contends for the welfare of the future as well as of the present. This is the creed to which I subscribe, and until sociologic science furnishes us with the knowledge of fundamental, incontrovertible laws which with unfailing necessity produce invariable effects, we will have to state our creeds before preaching; this may not be a very scientific proceeding, but where, as I have stated, emotions play such a prominent part science and exact reasoning must suffer.

"The end of government is the good of mankind!" This briefest and broadest statement of the purpose of government, which breathes the true philosophical spirit of Locke, is much less a formula, as Huxley calls it, or a working theory, than a historical fact, expressive of the visible trend which the evolutionary development of society has taken and which the careful student of the history of mankind can now deduce much more readily than even Locke; the broadly humanitarian tendencies of the governments of to-day, as compared with those of old, stand out unmistakeably in spite of the many narrow, clannish policies that still prevail.

Yet the active politician or statesman would hardly find it practicable to formulate and direct the measures and methods for such an end on such a broad basis. He requires limitations. If he succeeds in accomplishing or promoting the good of that portion of mankind which is segregated as a nation, he may feel satisfied that he has also done his part in promoting the good of mankind.

There may then, to be sure, still remain antagonisms among the various governments which have to be smoothed away in that dim future which is the dream of the individualist, when the true 'Civitas dei,' the ideal nation comprising all mankind, is to materialize; "in which every man's moral faculty shall be such as leads him to control all those desires which run counter to the good of mankind and to cherish only those which conduce to the welfare of society." (Huxley, Nihilism.)

For the present this cosmopolitan activity appears premature even to discuss. We will do well, therefore, to hold fast to the wisdom of minding our own affairs, to regulate our own government in such a manner as to attain the good of our own nation.

However poorly at times this end of government has been attained or attempted in practice, however its functions have been perverted, however diverse the methods employed, the conception that government exists for the purpose of the good of the aggregation of mankind to which it extends,

may be asserted to have now universal acceptance among all peoples. The questions on which people differ are as to how the good of the nation is to be attained; it is as to methods, rather than objects, that diversity of opinion has always prevailed.

Even the individualist, when closely pressed and not too callous, will agree to this object of government, but he will insist that this object, the good of the nation, is attained by inactivity rather than by active exertion of the government, by allowing the individuals to work out their own salvation (or damnation) amid the free and unrestricted play of natural forces, rather than by making them do so. *Laissez-faire* instead of *Faire-Marcher!*

They overlook that the objects and the motives which inspire the action of the individual as such are and will remain entirely different from those of the aggregation of individuals. As individual he will strive and does strive to work out that 'unsocial peculiarity of desiring to have everything his own way and opposing others.' Beyond the gratification of his own desires and an interest in his immediate offspring and perhaps in the second generation, he lacks as individual, and naturally so, incentive to advance or to calculate with the future. It is only as citizen, a member of organized society, as a social being, in community with others, as a reasoner and philosopher with conceptions of the objects and aims not only of individual existence, but of society as a whole, of the race, that he allows considerations of the future to influence his action, that he realizes the higher human ideals; in this communal activity 'he feels that he becomes more a man.'

Social man, then, is not satisfied alone with the preservation of his species by means of unconscious adaptation to its surroundings, but *consciously* he adapts himself to his surroundings and, more than that, he influences and adapts the surroundings to himself, nay, he influences the future consciously, and therein, if in nothing else, he differs from the animal world and has outgrown the laws of their development.

How this has come to be so we need not inquire; it is so, that is enough. It is the momentum of education, of gradually accumulated tendencies that drives him on the path towards social and ethical improvement, with ideals in the future always before him. What we call the feeling of duty, which is the motive spring of most men's altruistic actions, is nothing but this momentum, which the accumulated education of generations has imparted to us and which produces the conscious civilizatory progress of the race, always setting up new ideals when the old ones have been attained, or when reason has dislodged them.

This civilizatory tendency has been upheld, however, only in the association, and is lost sight of by the individual as soon as he is dissociated and acts apart from his fellow members. This sounds like a paradox, that the tendencies and desires of the whole and its action should differ from the tendencies, desires and actions of its parts.

Yet even the sage of antiquity, Aristotle, recognized that, you could never arrive at the whole by a mere addition of the units composing it, that while the prosperity of the whole implied the prosperity of all individuals which it includes, yet in our treatment of social questions we must proceed from the standpoint of society, not from that of the individual, the welfare of society could not be secured by attention to individual claims. And we observe this every day in larger or smaller assemblies of men; the emotions, feelings, provoked in the assembly lead to entirely different actions than if each member separately had acted on his own motion. The feeling of patriotism, which inspires many actions of nations and is of a kind with the civilizatory tendencies referred to, can hardly be

thought of outside of organized association, and so all the altruistic and ideal aspirations of the best and most advanced apostles of humanity, which have in view the improvement of the conditions of the future, the advancement of the race, are not of an individualistic but of communist nature, possible only in society and attainable only by associated effort.

Government then, the instrument of associated action, the expedient of organized society, the brain and hand of the nation, becomes the means not only of securing social existence, but social progress, and out of this object of government arises what I have called the providential functions of government, which have in view the future of the nation, as contrasted with the current functions of government, which refer to the more immediate needs of social, political, commercial and economic intercourse.

Government becomes the representative not only of communal interests as against individual interests, but also of future interests as against those of the present. Its object is not only for the day, but includes the *perpetuity* of the well-being of society and the perpetuity of such favorable conditions as will conduce to the *continued* welfare and improvement of the same; in short, its activity must be with regard to continuity, must provide for the future, must be providential.

Mark, we do not create this special providence for the individual, but for society; the individual will have to work out his own salvation to a large extent with the opportunities for advancement offered by society, but society itself can only act through the state or government, and as the representative of the future the state cannot, like the individual, 'let the future take care of itself.'

In our present state activity and legislation there is as yet but little realization of its providential character. Even the question of education, which partakes of that character providing in part for future improvement, is only imperfectly considered from this point of view. The questions of the franchise as well as that of imigration, both of which are of greatest influence upon the future composition and condition of our society, are much more often discussed with reference to the rights of present members than with reference to the future of society.

The one condition of social life in which the action of the present influences the future almost more than in any other direction, namely, the condition of the means of material existence and their economical use (the economy of resources) has received perhaps the least recognition in practice as well as in theoretical discussion; and especially is this absence of attention to this most important branch of economics noticeable in English literature.

The reason probably is that the need of careful analysis of this factor of social life has as yet not been pressing. But as the world has been explored in all corners and the extent of its resources has become more nearly known, and as it is being rapidly peopled everywhere and the causes of depopulation are becoming less, the warnings of Malthus and Mill come home to us with new force and the study of the nature, relation to social life and development, and the economy of resources becomes a most important branch of social science, which will overshadow some of the other branches now appearing all important. When the questions of the extension of suffrage to women, of tariff, of taxation, of coinage and currency, which are all merely incidents, will have sunk into the background; the question of the economy of the resources which constitute and sustain the political, commercial and social power of the nation, long neglected, will still claim attention, for only those nations who develop their

national resources economically and avoid the waste of that which they produce can maintain their power or even secure the continuance of their separate existence. A nation may cease to exist as well by the decay of its resources as by the extinction of its patriotic spirit.

Whether we have a high tariff or no tariff, an income tax or a head tax, direct or indirect taxation, bimetalism or a single standard, national banks or state banks, are matters which concern, to be sure, the temporary convenience of the members of society, but their prejudicial adjustment is easily remediable; when ill effects become apparent, the inconveniences may be removed with but little harm to the community and none to mankind at large or to the future. But whether fertile lands are turned into deserts, forests into waste places, brooks into torrents, rivers changed from means of power and intercourse into means of destruction and desolation, these are questions which concern the material existence itself of society, and since such changes become often irreversible, the damage irremediable, and at the same time the extent of available resources becomes smaller in proportion to population, their consideration is finally much more important than those other questions of the day.

It is true that as individuals the knowledge of the near exhaustion of the anthracite coal fields does not induce any of us to deny ourselves a single scuttle of coal so as to make the coal field last for one more generation, unless this knowledge is reflected in increased price. But we can conceive that, as members of society, we may for that very purpose refuse to allow each other or the miner to waste unnecessarily. That this conception is not absurd and may be practically realized without any strain in our conceptions of government functions, is proved by the fact that it has been carried out in practice in several cases without opposition.

Absurdly enough we have begun such action with reference to our resources where it is perhaps of least consequence, as for instance, when by the establishment of hunting and fishing seasons and by other restrictions we seek to prevent the exhaustion of the fish and game resources. This is a good illustration of the fact that emotion rather than reason, sentiment rather than argument, are the prime movers of society. It was hardly fear of the exhaustion of this readily restorable resource, and economic reasons that lead to this protection of our fisheries and game, but love of sport that gave the incentive. And again it needed the love of sport, to set on foot the movement for the improvement of the roads in the United States, which the realization of true economy had not the power to bring about.

In some countries the waste of forest resources is more or less guarded against and the waste of water is at least to some extent a matter of control by society.

While we do not prevent single individuals from ruining themselves financially and hazarding the future of their families, we do prevent associated portions of the community, corporations, towns and cities, from jeopardizing their future by preventing them from extravagant expenditures and contracting of debts. This, too, is perhaps less designed for the future than to protect present members against undesirable burdens.

There are enough precedents established to show that whatever the greed and selfishness of the individual may dictate, society recognizes its right to interfere with the individual not only for its present objects, but even for considerations of the future.

To recognize how far any of the resources must become objects of national concern, it is necessary to understand their relative significance for the present and for the future development of society or of the particular nation From this point of view I

have at some former occasion classified the resources under four heads, namely:

1. Resources inexhaustible.

2. Resources exhaustible and non-restorable.

3. Resources restorable, but liable to deterioration under increased activity.

4. Resources restorable, and apt to yield increased returns to increased activity.

Of the first class, hardly any one can be mentioned that are usually denominated as resources; land, water, air and the forces of nature would fall under this class, but since it is not so much these things themselves as the conditions in which they are found that make them resources, and since these conditions are alterable by human agency, their inexhaustibility with reference to human requirements is not entirely established. With the land it is rather the fertility of the soil that makes it a resource, except so far as it serves for building purposes. With the water, except for the absolute necessity of life, it is its desirable distribution—terrestrial and atmospheric—which constitutes it a resource in the sense of satisfying human wants.

Of such resources as are in time exhaustible without the possibility of reproduction we may mention the mines. The supply of coal, 'the bread of industries,' in Europe is calculated to last not more than three or four centuries, although scarcity is expected long before that time, and in our own country we are told that anthracite coal mines do not promise more than sixty years of supply under present methods of working. The silver and gold mines, upon the basis of which Nevada became a State, are said to show signs of exhaustion. Oil fields and natural gas wells of very recent discovery belong to this class of exhaustible resources; with their consumption in satisfying our wants they are destroyed forever.

The timber of the virgin forest and its game, the water power of the streams, largely dependent on the conditions of the former, the fisheries, and to some extent the local climate conditions, are resources of the third order, capable in most instances, of reproduction or restoration under human care, after having been deteriorated by uneconomic exploitation, or by change of contingent conditions, as when brooks and rivers are lessened in volume or else filled with flood waters and debris in consequence of forest destruction.

Lastly, as resources restorable and yielding increased returns to increased activity we would find most of those resources which are the product of human labor, industry and ingenuity; the accumulated educational fund and other conditions of civilization, the people themselves, capable of performing labor.

It might appear that of the natural resources, the soil with its fertility, capable under intensive cultivation of increasing its yield, should be placed here, but when this increased activity is unaccompanied by rational methods this resource too will deteriorate almost to a degree where its restoration is practically precluded.

Altogether, while possibility of restoration has served in our classification, practicability, *i. e.*, the relation of expenditure of energy and money to the result will have to influence the ranging of the resources in these classes as far as state activity with regard to them is called for.

Often it will be a difficult task to assign a particular resource to a proper position with regard to its bearing upon social interest, but conservatism, which is the logical policy of society, will lead us in cases of doubt to lean toward the presumption that the interests of society are more likely to suffer than those of the individual; and a mistake in curtailing private interests will be more surely and easily corrected than a mistake in not having in time guarded social interests.

To properly appreciate the position in any given case, we will have to weigh the present and future significance of the resource, the likelihood of its permanence, and the likelihood of its fate under private treatment, whence the necessity of bringing it under sovereign control of the state and the quality of the control will appear.

That each individual case will require its own consideration and adjudication holds there as well as with legislation in reference to industrial action, and the general classification here attempted offers simply a suggestion as to the general points of view from which each case must be considered.

With the conception of the government before us as outlined, namely, as the instrument to secure the possibility not only of social life, but of social progress, the representative of communal interests as against private interests, of the future as against the present, we can get an idea as to how far the providential functions of the state are to be called into action.

The policy of governmental control over waterways, roads and lands, falling under the operation of eminent domain, is well established in most governments. The ownership and management of railways has proved itself as in the interests of society in several countries. It should be extended with even more reason to all exhaustible, non-restorable resources. That in the interest of society and of production as well, the mines should belong to the state in order to prevent waste, we may learn from the actual experience of France, where they are state property and only the right to work them under supervision is leased to private individuals.

Of the restorable resources it is apparent that with regard to those which yield increased returns to increased labor, the interests of society and of the individual run on parallel lines. Where interference of the state in their behalf exists, it is not from providential reasons; the amelioration functions only are called into requisition. Whatever tends to stimulate private activity is to be promoted, whatever retards development of intensive methods to be removed by government. Industrial education, cultural surveys, bureaus of information, experiment stations, and other aids to private enterprise, constitute the chief methods of expressing state interest with regard to these resources.

The three great resources upon which mankind is most dependent, and which, therefore, demand first and foremost the attention of the state are the soil as food-producer, the water and the climatic conditions. The utilization of these three prime resources by agriculture forms the foundation of all other industries, or as Sully puts it: "Tillage and pasturage are the two breasts of the state." It is true the manufacturer increases the utility of things, but the farmer multiplies commodities; he is creative, and he therefore above all others can claim a right to first consideration on the part of the state.

Whatever may be thought of the practicability of Mr. George's plans and of his conclusions, the fundamental principle upon which he bases his land theories will have to be admitted as correct. Society, the state, is the original owner of the soil. Whether the ownership should continue is another question.

The soil is a valuable resource as far as it is fertile and capable of agricultural production; the fertility, while liable to deterioration, can, with few exceptions, be said to be restorable, and it certainly yields increased returns to intelligent increased labor. It ranks, therefore, with those resources which can be left to private enterprise, calling only for the ameliorative functions of the government. But while this condition prevails, when the soil is put to

agricultural use, it does not exist as long as the soil is not so utilized. By the withdrawal of large sections of land from such use, society is harmed and deprived of the benefit which it would derive from a use of its property. The proper distribution and the appropriation of the soil to proper use form, therefore, fit functions of government control.

The rational appropriation of soil (land) to either farm use, pasturage or timber production, one would be inclined to think, could be left to the regulation of private intelligence; yet the fact is that the thin rocky soils of mountain districts are worked for a scanty agricultural crop, when they should be left to timber; while thousands of acres in fertile valleys are still under the shade of virgin forests.

Water and climate are the accessories to agricultural production and supplement the resources of the soil. Not objects of private enterprise directly, except in a limited manner, it is evident that, as far as they or the conditions which influence them can be at all controlled, they should be under the direct control of the state.

A rational management of the water capital of the world, in connection with agricultural use of the soil, will become the economic problem of the highest importance as the necessity for increased food production calls for intensive methods. And in connection with this problem, it must become a matter of state interest by a rational management of existing forests and by reforestation at the head waters of rivers and on the plains to secure the conditions which make a rational utilization of the waters possible. For without forest management, no water management is for any length of time possible, no stable basis for continued productive agriculture, industries and commerce.

I may be allowed for the sake of illustration to state more in detail the considerations which pertain to the one resource with which I am most familiar, the forest.

The virgin forest is a natural resource, which answers two purposes of civilized society. On the one hand it furnishes directly desirable material; on the other hand it forms a condition of soil cover, which influences directly or indirectly, under its own cover and at a distance, conditions of water-flow, of soil and of local climate.

To the individual it is in the first place the timber, the accumulated growth of centuries, which has an interest to him and which he exploits for the purpose of making a profit on his labor and outlay. The relation of the forest to other conditions, direct or indirect, immediate or future, hardly ever enters into his calculations. Now the exploitation of this resource is a necessity of our civilization, but the economic conditions of our country and for that of any new or partially developed country, especially the condition of the distribution of population and consequent necessity for a long haul of the bulky material, bring it about, that only the best kinds of timber and the best cuts of these can be profitably moved to market. Hence, since profit is the object, exploitation is by necessity wasteful.

Again culling the forest, which means removing the good kinds, although apparently not as destructive to the resource as clean cutting, leaves the ground to the kinds not useful or less useful to man, to the weeds of the forest. This means not only occupation of the ground by undesirable kinds, but prevention of the reproduction of desirable kinds, which being reduced in numbers, hence are at a disadvantage in the struggle for existence and especially in the struggle for the necessary light under the shade of the growth that was left.

Thus even under legitimate exploitation, such as the interests of the individual exploiter and the economic conditions of the

country predicate, the future of the resource must be injured, its value deteriorated by changing its composition and quality.

Now comes the further danger of neglect which arises from the fact that when the marketable timber is gone the interest of the individual in the forest is also gone. The conflagrations which follow the wasteful exploitation with the accumulated debris of timber operations left in the woods kill and damage not only the remaining old timber, but all the young growth of desirable kinds. An additional vegetation of weeds, tree weeds as well as others, adapt themselves to the new conditions and further prevent the reëstablishment of desirable kinds. Often these fires burn out the soil itself, which consists of the mould from the decay of litter accumulated through centuries, and thus not only the practicability but the possibility of restoration is prevented.

Thus by leaving this resource to the unrestricted activity of private individual interests it is quickly exhausted, its restoration is made difficult and sometimes impossible, its function as a material resource is destroyed.

It is possible to so exploit the forest that the natural reproduction of the best kinds in even superior quantity and quality is secured; the methods which must be employed to this end necessarily entail curtailment of present revenus, and as the new crop takes decades, nay, a century and more to grow to maturity the incentive for the short-lived individual, to curtail his present income for the sake of an income in the uncertain future is but slight. Where, as in older countries, the institution of family estates had secured stability and permanency of holdings, the interest in the future was greater and staved off the evil day of forest devastation, but even there the rapidity of change of the modern world asserts itself, and the safety of this resource in private hands has become doubtful.

The other functions of the forest, namely that which it exercises as a soilcover by preventing erosion of the soil, by regulating waterflow, changing surface drainage into subsoil drainage and thereby influencing the water-stages of rivers and its possible relation to the local climate conditions, preeminently renders it an object of government consideration.

The attempt to get the largest profit from his labor, which is the only incentive of private enterprise, is bound to lead to unconservative management, especially where the maintenance of favorable forest conditions from protective considerations is necessary, for here again the need of leaving valuable material for the time being, the need of curtailing present revenue for the sake of the future and for the sake of other people's interests can hardly be expected to be appreciated by the private individual.

Here the general principle of Roman law, *Utere tuo ne alterum noccas*, prevention of the obnoxious use of private property, establishes readily the propriety of state interference, and by *alterum* we are to understand not only the other citizen of the present, but of the future as well.

We see, then, that the forest resource is one that under the active competition of private enterprise is apt to deteriorate and in its deterioration to affect other conditions of material existence unfavorably; that the maintenance of continued supplies as well as of favorable conditions is possible only under the supervision of permanent institutions, with whom present profit is not the only motive. It calls preëminently for the exercise of the providential functions of the state to counteract the destructive tendencies of private exploitation. In some cases restriction of the latter may suffice; in others ownership by the state or some smaller part of the community, a permanent associated institution is necessary.

I close with the hope that the students of political economy associated with this Section will see that this branch of their science, the economy of natural resources, so important and yet so much neglected, requires on their part a fuller and more careful consideration.

B. E. FERNOW.

DEPARTMENT OF AGRICULTURE,
WASHINGTON, D. C.

CURRENT NOTES ON ANTHROPOLOGY (XII.).

'CARIB ART' AND ITS SIGNIFICANCE.

WHEN Von Den Steinen went among the Carib tribes of southern Brazil he was surprised to find himself called by them a 'Carib,' until he found the word means 'a stranger' (literally 'not like us'). It is, and long has been, a term used extremely vaguely. There are tribes in Central America called Caribs, who are no more allied to the Caribbean stock than are the Iroquois. In fact, there was not a single tribe of the stock in North America anywhere at the time of the discovery.

'Carib art' has been alleged to have left its traces in Florida and in the Greater Antilles; but the curvilinear decorations, the little clay images, and the broad, rough-flaked arrow heads, asserted to be evidence of Carib work, have yet to be shown to be peculiar to that stock. In a recent pamphlet written by Mr. J. J. Quelch, curator in charge of the British Guiana Museum at Demerara, he mentions a number of such objects found on the Puruni River and the east coast, which he inclines to attribute to the Caribs, though historically they did not live in that region. Other relics were a small plate of gold, neat quartz beads, perforated, granite plates, pots and polishers and pottery with highly wrought figures of men and animals. These certainly suggest a nation to the west of the locality, but not necessarily Carib. That name should now be confined to the members of the well-marked linguistic stock which we now know so well through the admirable studies of Von Den Steinen and Lucien Adam. It is in no wise synonymous with 'Antillean,' as some have employed it.

SYPHILIS AND LEPROSY IN ANCIENT AMERICA.

As a question in the history of disease, as well as having some archæological bearings, the presence of syphilis and leprosy in America before the discovery has deservedly attracted the attention of investigators.

The latest contribution to the subject is by Dr. Albert S. Ashmead, in a series of articles in the *Journal of the American Medical Association*, reprinted in pamphlet form. He has had the good idea of studying the ancient pottery for representations of persons afflicted with these deforming diseases, and his results are quite remarkable. He finds in the mound pottery of the United States, and especially in the ceramics of Peru, numerous figures of persons with their faces or members marred by some erosive disease, akin to, if not identical with, those mentioned. His conclusions are that both prevailed in different parts of America in pre-Columbian times; but that the deformations represented are more likely to be lupoid or syphilitic than leprous, without, however, excluding the possibility of the latter.

He does not consider that the presence of these diseases on the American continent would necessarily point to an extra-American source. We know too little of their etiology to justify the construction of theories in that direction; but it enables us better to understand the significance of many of the specimens in our museums.

PREHISTORIC BOTANY.

THE American ethnologist, Charles Pickering, devoted the last fifteen years of his life to a vast work intended to show the early history and migrations of the human species by the distribution and cultivation