SCIENCE

FRIDAY, JULY 15, 1921

CONTENTS

MSS. intended for publication and books, etc., intended for review should be sent to The Editor of Science, Garrison-on-Hudson, N. Y.

THE RESPONSIBILITY OF THE BIOLOGIST IN THE MATTER OF PRESERVING NATURAL CONDITIONS

THE writer has accepted a joint chairmanship of the Committee on the Preservation of Natural Conditions of the Ecological Society of America. The special task undertaken by him is to interest some of our leading scientific organizations and institutions in a proposed affiliation for the purpose of making "a more serious effort to rescue a few fragments of vanishing nature."

I am only too painfully aware of the fact that this task might have been undertaken by others with much more promise of success. There are many in the ranks of American biologists whose scientific prestige and administrative ability would carry far greater weight than mine. There are many who could—if they would—undertake this plain duty without risk to their health and without serious curtailment of their output in the field of research. It is my hope that more of our leaders in science will be aroused to the necessity of becoming also leaders in the conservation movement. I for one will welcome the day when this leadership will pass into their hands. In the meantime, I shall be glad, if only in a slight degree, to play the rôle of an enzyme or catalyzer, which may provoke effective energy transformations in others.

That both our native fauna and flora and our natural scenery are disappearing at an appalling rate is obvious to all, except those whose interests and outlook are bounded by the walls of their laboratories. Despite the indignant denials of some, I am afraid that this last type of individual is not wholly mythical. But the great bulk of the apathy with which we have to contend is doubtless due to another cause. This is a spirit of

fatalism—the sullen acceptance of a situation which is regarded as inevitable. What can a few dreamers do to stem the tide of such powerful biological and social forces as the prevailing spirit of commercialism, the concentration of present-day mankind in cities, with a resulting dominance of the urban viewpoint, and particularly the resistless pressure of increasing population everywhere?

Whether in the future these calamitous tendencies will be voluntarily checked by the intelligent concerted action of mankind, or whether they will be checked automatically by some world-wide catastrophe, need not concern us here. Ultimately some endurable balance will be struck between the human population of our globe and the available amount of food, space and other conditions essential to life. For all we know, this unbridled growth of population *may* be halted before the world is utterly congested, and while there are still large areas in a more or less primitive condition. Does not this last supposition contain enough of probability to warrant its acceptance as a guiding principle of action? Is it not worth while to reserve from settlement and exploitation extensive tracts of the earth's surface, representing at least the most interesting types of fauna and flora and physiography?

We have made a brave beginning in this direction, with our national and state parks, our national forests, national monuments, game refuges and the like, though it must be confessed that these reservations are still continually threatened by predaceous interests and that their permanence is not in the least assured.[1] But we should carry these efforts vastly further. The areas chosen should be more numerous and more diversified. A greater variety of motives should be given scope in achieving these ends. Economic considerations, such as the conservation of lumber and water-power, should still be recognized as immensely important, as should also the need for public recreation grounds. But purely scientific considerations should likewise be accepted as legitimate reasons for reserving tracts from settlement or molestation.

[1] Witness the present federal water-power act (now happily amended), and the recent attempts to raid the Yellowstone.

Work of fundamental importance regarding the phenomena of heredity has been done in our laboratories, experimental gardens and breeding-pens, and much of this work bears more or less directly upon the problems of organic evolution. But there are many of us who feel that these problems can not be solved without a very intensive study of the products of evolution in nature. To try to arrive at an explanation of the "origin of species" without an adequate analysis of the phenomena of geographic variation, and the interrelationships of our species and subspecies in the wild, seems to some of us utterly bizarre.

So far, so good, but what can we do about it? This is naturally the hardest question of all to answer. To seek advice on this subject is my main excuse for writing this article. Let me say before going further that I do not make the absurd claim that I or my colleagues on this committee are solitary voices crying in the wilderness. Many and powerful are the influences already enlisted in support of one or another movement toward the protection of wild life and of natural scenery. And the concrete results, in terms of actual achievement, would require scores of pages even to outline. Many of these results have become incorporated into our laws and our machinery of government.

It is my purpose here to point out two fundamental needs: (1) the need of some one or more national organizations whose duty it shall be to coordinate all these activities and impulses, and (2) the need that our scientific men, and particularly our biologists, shall play a far greater part in this movement than they have ever done in the past. I shall speak of this second point first.

Biologists, above all others, should be in a position to appreciate the loss to science which results from the destruction either of single natural species or of natural associations of species. They are in a unique position to give advice as to what particular species and

associations are of greatest importance to science, and as to which ones are in most urgent need of protection. It is likely, too, that many of our number are in a position to suggest the most promising methods of protection. At least, no others are probably so well qualified to do so.

Most of all, perhaps, the influence of the biologist is needed in counteracting the dominant utilitarian or materialistic trend of the day. He should be on hand to register his insistence upon the recognition of claims that are not expressible directly or remotely, in dollars and cents, or in the merely quantitative expansion of our civilization. If he camouflages his true feelings by talking in the current language of the market-place, he is, to that extent, a traitor to our cause. The conservation of our material resources can be depended upon to take care of itself—in the future, if not in the past. Some of the great commercial interests themselves are beginning to insist that a sane policy be adopted in these matters. But the cause of science—genuine science—in the public mind, is still very weak, and needs every ounce of energy which can be thrown into its support. How, let us again ask, can this energy be most effectively brought to bear at the present time? This is, in a large degree, a question which I am asking my readers, rather than attempting to answer here.

Unlike, as I believe, the case of researches which are directed toward the discovery of general principles, a practical project like the one in hand can only be accomplished by the aid of a high degree of organization. What form this organization will ultimately take, in the present instance, is hard to forecast. It is my belief that sooner or later its administration must be in the hands of men who are willing and able to make this their life work. Such men will probably be hard to find. The university biologist, however gifted otherwise, is commonly neither willing nor able to achieve success along these lines. On the other hand, a mere high-grade clerk, the counterpart of some of our bureau or division chiefs in the government service, would probably make an even more lamentable failure. A broadly trained field naturalist, with a more than usual endowment of public spirit and administrative talent, would doubtless fill the bill. His salary should be commensurate with his great responsibilities. He should have a staff of expert assistants, giving much of their time to first-hand observations of the unequal struggle between man and nature, and to actual surveys of proposed reservations. Furthermore, this important official should have an adequate office force. These are minimum requirements.

Who would foot the bill? I don't know. I have never had anything to do with raising funds for major enterprises. In reply, however, I will ask another question: Is not the preservation of large fractions of our fauna and flora and landscape, in their natural condition, a project calculated to stir the imagination of money-givers of the sort that have endowed various other enterprises for the welfare of mankind?

The actual administration of any tracts of land, set aside as natural preserves, would doubtless devolve upon the national or the state governments. The cost of purchasing this land might be met either by private donations or by government or state appropriations. But the cost of conducting such preliminary surveys as I have suggested, together with the necessary nation-wide educational campaign, would doubtless have to be defrayed out of funds from purely private sources. And these funds would need to be large.

I have deferred to the last the specific proposals which I have to make. The type of organization which I have outlined above is not yet in existence. So far as I know, neither the men nor the funds are in sight at present. Furthermore, should any such central bureau or clearing-house for conservation activities be established, it would have to work, in a large degree, through the various existing organizations. Prominent among these, at the present time, is the Ecological Society of America, which has devoted much effective labor toward interesting Amer-

ican biologists in the preservation of natural conditions. This society, with its special committee, would doubtless expect to continue actively in the field, even if the administrative and coordinating functions should be largely handed over to another body. The actual relations betwen the two must be left to the future to decide. It is entirely probable that an amicable and satisfactory solution will be reached when the problem presents itself.

In the meantime, this committee proposes to seek the support of various other organizations which may be interested in achieving the same ends. The present writer has undertaken to solicit the cooperation of some of our principal scientific societies, museums, universities and research institutions. Individual letters will doubtless be sent to the officers of many of these organizations in due time. Matters will be greatly expedited, however, if such officers will take the initiative into their own hands and will communicate with the committee as to what assistance they personally, or the organizations which they represent, are prepared to render.

The assistance might be of various sorts. (1) It might take the form of a mere endorsement or pledge of moral support to the Ecological Society's conservation activities. Such an endorsement, particularly if published in one of the scientific journals, would give to these activities a certain degree of publicity, as well as an added importance in the eyes of many persons. Some recent resolutions of the American Association for the Advancement of Science, the American Society of Zoologists and the Botanical Society of America are cases in point.[2] Unfortunately, however, most of our national scientific societies have thus far shown no interest in the conservation of nature. The officers of one leading biological society decided a year ago that the subject was not germane to the purposes of their organization, and a resolution which had been drafted by one of its members was not even brought to a vote.

(2) Some of these societies might well be expected to go much further than voting a mere cut-and-dried endorsement of conservation activities. Why should not occasional papers, lectures or even symposia in this field be regarded as appropriate material for their programs? Many of the data which are made use of in the campaign for the preservation of natural conditions are likewise of high scientific interest. Various results of disturbing the balance of nature might be mentioned in this connection.

(3) Advice would be welcomed as to lines of activity which the committee might profitably undertake. Suggestions as to possible methods of "organizing" the various scientific interests are to be included here.

(4) Financial assistance is needed, even for this committee's present limited activities. The suggestion has been made that some of the scientific societies might be willing to contribute a certain fraction of their annual dues to the Ecological Society for the purpose of supporting its conservation activities. An appeal has already been made to the National Research Council for a grant for this purpose.

As an aid in the promotion of these ends it has been proposed that the various scientific and research organizations so disposed should form some sort of a loose federation or association of "societies interested in the preservation of natural conditions." This would be likely to promote the interchange of ideas, and effectiveness of action, where action seemed called for. The constituent societies would presumably appoint delegates to the meetings of this federation; these delegates being such of their members as have shown the most active interest in conservation matters. Such a federation would naturally have some organic relation to the Ecological Society's committee. Its efforts, at present, might be effective in several directions: publicity and education, endorsement of or opposition to proposed legislation, actual investigations of specific cases in which emergency measures seem to be necessary, and perhaps some others.

The writer would welcome opinions from the officers of these societies as to the desirability of forming such a federation. He would also greatly appreciate any suggestions

[2] Science, January 7 and January 28, 1921.

or advice regarding the matters covered by the foregoing article, even if these take the form of destructive criticism. It seems to me that here, as in so many other cases, no far-reaching plans should be adopted until we have had a free discusion in which all angles of the subject have been considered. I am therefore hopeful that this communication may call forth replies, either addressed to me personally or published in the columns of SCIENCE.[3]

F. B. SUMNER

SCRIPPS INSTITUTION FOR BIOLOGICAL RESEARCH, LA JOLLA, CALIFORNIA

THE NATIONAL GEOGRAPHIC SOCIETY COMPLETES ITS GIFTS OF BIG TREES

THE trustees and officers of the National Geographic Society are deeply gratified to announce to members that the society has been continuing its effort, begun in 1916, to preserve the Big Trees of Sequoia National Park.

By a final purchase in April, 1921, of 640 acres of land in Sequoia National Park, these famous trees, oldest and most massive among all living things, the only ones of their kind in the world, have been saved; they will not be cut down and converted into lumber.

Were a monument of human erection to be destroyed, it might be replaced; but had these aborigines of American forests been felled, they would have disappeared forever. The Big Trees could no more be restored than could those other survivals of indigenous American life, the red man and the buffalo, should they become extinct.

Members of the National Geographic Society will recall that, in 1916, Congress had appropriated $50,000 for the purchase of certain private holdings in Sequoia National Park, but the owners declined to sell for less than $70,000. In that emergency the National Geographic Society took the first step toward saving the Big Trees by subscribing the remaining $20,000. Thus 667 acres were purchased. The society's equity in them was conveyed to the government, and this tract became the property, for all time, of the American people.

In 1920, inspired by the first benefaction, three members of the society gave the society sums equivalent to the purchase price of $21,330 necessary to acquire three more tracts, aggregating 609 acres. Thus the original area of Sequoias saved from destruction was almost doubled.

At the request of the donors, this area was presented to the government by the National Geographic Society in June, 1920. This gift was made possible by the generosity of Stephen T. Mather, director of national park service, who personally contributed $13,130; by D. E. Skinner, of Seattle, who contributed $5,000; and by Louis Titus, of Washington, D. C., who contributed $3,200.

There still remained one other important private holding in Sequoia National Park amounting to 640 acres. Through this tract, which is covered by a splendid stand of giant sugar-pine and fir, runs the road to Giant Forest.

To acquire this approach to the unique forest and to eliminate the last of the private holdings in this natural temple, the National Geographic Society and friends of the society, in 1921, contributed $55,000, with which the tract was purchased. On April 20, 1921, it was formally tendered in the name of the society, through Secretary of the Interior Albert B. Fall, to the American people.

This sum of $55,000 includes $10,000 from the tax fund of Tulare County, California, within which the Sequoia National Park is

[3] Those who are desirous of reading fuller discussions of wild life conservation and the preservation of natural conditions are referred to articles by Harper ("Natural History," Vol. XIX., 1919), Van Name (SCIENCE, July 25, 1919), and Sumner (*Scientific Monthly*, March, 1920). Two books by Hornaday are also to be recommended: "Our Vanishing Wild Life" (N. Y., Scribner's, 1913), and "Wild Life Conservation in Theory and Practise" (Yale University Press, 1914). The Ecological Society of America is likewise about to publish a brief résumé of the "Reasons for Preserving Natural Areas," which will doubtless be rather widely distributed.