

# NATURE

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## NATURE RESERVES

IF one may judge from impressions of casual talk, there is a good deal of confusion in the public mind on the subjects usually grouped under such terms as 'nature conservation' and the like. Many people who have not given much thought to the subject seem to have little more than a vague desire that as much as possible of England's green and pleasant land should be saved from the uglier features of industrial development. There are also many to whom the words 'national parks' suggest only memories of Hampstead Heath on a Bank Holiday, and 'nature reserves' mean only barbed wire and notices threatening the prosecution of trespassers. It may be worth while, therefore, to recapitulate some elementary considerations which, although they have long been familiar to scientific men interested in such matters, are not yet generally appreciated. For this purpose a convenient starting point is given by the recently published report of the Nature Reserves Investigation Committee\* which presents, within the compass of a pamphlet of 25 pages, an admirably balanced statement of the purposes of nature conservation and of the methods by which these purposes may be attained.

The objects to be aimed at may be classified under three main headings: amenity, education and scientific study. The report makes a point that is often overlooked when it says that "the beauty and interest of landscape does not depend solely, or even mainly, upon the sculpturing of the earth's surface, but upon the nature of the living carpet which covers and surrounds these physical features". This has only to be stated to appear self-evident. Imagine, say, the Lake District stripped of this carpet, and who would care to visit it for pleasure? Even the provision of 'national playgrounds', then, involves problems of applied biology.

In speaking of the educational aspect of nature conservation, the authors of the report have in mind chiefly the school teaching of nature study in Great Britain. This subject is now included in the curriculum even of urban schools, and there is already a demand, which is likely to increase, for the preservation of such scraps of wild life as may persist within areas accessible to the pupils. It is suggested that, just as individual schools have their own playing fields, they might also have their own small-scale nature reserves, for the establishment and care of which they would be responsible.

The value of nature reserves for purposes of scientific study scarcely needs to be pointed out, but the report rightly emphasizes the fact that this value is not only academic but also has a very important economic aspect. It requires no great effort of imagination to realize that, as the agriculturist studies in ever closer detail the influence of local differences of climate and soil, valuable indications may be got from the natural or spontaneous fauna and flora of

\* Nature Conservation in Britain. Memorandum No. 3 of the Conference on Nature Preservation in Post-War Reconstruction. Issued by the Society for the Promotion of Nature Reserves. (London: British Museum (Natural History), 1943.) 6d.

different districts, and "it is also a reasonable assumption that there are still in nature plants or animals of potential, but as yet unknown, value to mankind".

What, then, is this 'Nature' which for these and other reasons we desire to conserve? There is a very widespread impression that on the cessation of human interference, the animal and plant life of any area will speedily revert to a 'state of Nature', a permanent and unchanging condition undisturbed save by the endlessly repeated cycle of the seasons. Nothing could be further from the truth. The 'balance of Nature' is a phrase that comes so readily to mind that we are very apt to forget that it describes not a static and enduring condition but a swaying and uncertain struggle of opposing forces, in which now one and now another obtains a temporary mastery. Botanists have made us familiar with the idea of a natural succession of plant associations, and, apart from the profound reactions of this succession on the fauna, there is increasing evidence that all animal populations are constantly waxing and waning, sometimes in regular cycles, often with seeming irregularity, under the influence of factors that can only be guessed at. In most instances nature conservation aims at the perpetuation of existing conditions, and it should be realized that this can only be achieved by unceasing and scientifically directed measures of control. To take a single example, Wicken Fen, one of the best-known and certainly the most thoroughly studied of the nature reserves now existing in Great Britain, owes its approximate stability to unremitting management, the regulation of drainage, the cutting of reeds, the eradication of brushwood and so forth, far more than to the mere exclusion of collectors.

Apart, however, from this natural instability of the fauna and flora, it has to be borne in mind that there is scarcely a square mile of Great Britain, except on the tops of the highest mountains and the wilder parts of the sea-coast, that does not owe its present aspect in some measure to the activities of man. It is easy to realize this in most scenes of the English countryside, but when standing on a Scottish moor looking over unending miles ablaze with the purple glory of heather, it is harder to remember that the landscape is as much a product of human cultivation as a cornfield or a cherry orchard. Yet nothing is more certain than that the stopping of heather burning for a few years would cover most of these miles with brushwood and incipient forests. It is above all necessary, therefore, that schemes of nature conservation should start with a clear idea of what it is desired to conserve, and that adequate provision should be made for continuous scientific supervision and management. Without this control there is evidence that unexpected and undesirable results may follow. It has been found, for example, that when a patch of woodland in the midst of an agricultural area was isolated and all shooting within its limits prohibited, the woodland was colonized by predatory birds and mammals, which not only exterminated most of its other inhabitants but also used it as a base of operations for raids on the surrounding countryside.

It is to be hoped that the authorities responsible

for nature reserves will discourage any attempts at introduction or re-introduction of animals or plants into areas which they do not now inhabit. It is scarcely necessary to point out the futility of suggestions such as that made some years ago for the sowing on Welsh mountains of the seeds of alpine plants from Switzerland, or the attempt, which is believed to have been partially successful, to add the edible dormouse to the list of British mammals. There is, however, a superficial plausibility in the arguments for the re-introduction of animals once native but now extinct in Great Britain. This has been done successfully, for example, with the capercaillie and less successfully, it is understood, with the Large Copper butterfly. Apart from the unpredictable results from any such interferences with the existing fauna and flora, these experiments amount to a wanton falsification of the records of geographical distribution. Modern taxonomy is working towards an ever finer discrimination of sub-species and local races of animals and plants, and, whatever may have been the case with the capercaillie, we are assured that the continental race of the Large Copper, now breeding at Woodwalton Fen and elsewhere, is quite distinguishable from the extinct British race of the species. It is to be deplored that a recent writer has seen fit to suggest, apparently in all seriousness, that the European beaver, the wild boar and the reindeer might be re-established in the Scottish Highlands.

The report makes the valuable suggestion that geological, no less than biological, features of Great Britain may require protection as nature reserves. This is a matter to which little if any attention has hitherto been given in Great Britain. Almost the only example of a protected geological feature that comes to mind is the "Fossil Grove" in Whiteinch Park, Glasgow, where a striking group of carboniferous tree-stumps has been preserved in a building erected over it by the Corporation of Glasgow. There must be many geological exposures all over the country that deserve protection against destructive quarrying.

One of the few aspects of the subject not touched upon in the report is that of river pollution, which, with the proposed redistribution of industry, must threaten many areas hitherto exempt. On one hand, the aquatic fauna and flora are as much deserving of preservation as those of the land and, on the other, a pure water supply is no less needful for any community of animals and plants than it is for any human settlement. There is no point in trying to set up a nature reserve on the banks of an open sewer.

The acquisition, protection and management of nature reserves involve a complex of problems, economic, legal and administrative, on all of which the report makes constructive suggestions. Starting from the admirable (if somewhat nebulous) principle that "the Government should take formal responsibility for the conservation of native wild life", it is recommended that a single central body should be set up to acquire and manage reserves that are of national importance, and to exercise supervisory and

consultative functions in respect of reserves held or administered by local authorities. The central body "should be distinct from, and have equal and parallel status with, the National Parks authority", the establishment of which has been recommended by successive Government committees. Whatever the administrative machinery, however, the paramount need for continuous scientific supervision cannot be too strongly emphasized.

## COAL UTILIZATION RESEARCH AND THE NATIONAL ECONOMY

THE emergence of coal as a factor of major importance in the war effort of the United Nations is one of the outstanding features of the times. Its importance in Great Britain alone can be measured by the establishment of a Ministry of Fuel and Power, concerned not merely with production but also with utilization of fuel. The Parliamentary and Scientific Committee—a non-party and unofficial body formed to link scientific workers with members of Parliament—has attempted to bring matters to a focus at a meeting on May 4 in the House of Commons, when a report on "Coal Utilisation Research and the National Economy" was adopted. Members of both Houses and others concerned with technical and scientific bodies have joined in its preparation. Statements had been received from experts and also from Major Lloyd George, Minister of Fuel and Power. Copies of the report have been sent to the Lord President of the Council and other Ministers in the hope that they might agree to receive a deputation to discuss the implementation of the proposals.

The report stresses the fact that the life of Great Britain as an industrial nation depends on the supply of energy and raw materials for manufacture. Our climate necessitates the use of large quantities of artificial warmth. The declining productivity of our collieries, it is asserted, must be offset by increased efficiency of utilization. New industries must be created to secure us against unemployment and develop exports. "All these vital objectives demand coal research on a scale never before contemplated in this or any other country. Coal research is an investment which will repay this country handsomely."

The report includes a review of the fuel situation as it may appear after the War, in the light of needs and the present position of fuel technology. In general, the arguments are not new but repeated with greater vigour and urgency than hitherto, and it is instructive to look back and recall how they were received and treated in former times. Royal Commissions in succession have found that the national resources of coal are a wasting and, so far as the choicest and most accessible seams in Great Britain are concerned, a wasted asset. In the early days of this century a gentle effort was made to control the export of coal by means of a small coal tax. This raised economic problems, and in an age

when trade had to be kept very free, the tax was short-lived. This indicates an important characteristic of the history of the coal industry. Coal has been regarded by the industry as a commodity to be bought and sold, not as a precious material, capable by means of scientific artistry of being fashioned into an infinity of new forms. The War of 1914–18 found the coal trade, actuated by commercial instincts, sinking costly new pits to achieve expanding exports—which, in the event, have not been realized.

Scientific men even then knew that Great Britain would some day have to cultivate greater thrift in the use of coal, and that this thrift would only be achieved by the application of scientific effort. So far back as 1906, the University of Leeds established a professorship of fuel technology, and in succeeding years the example has been followed to a greater or less extent in other universities. Considering their resources, fuel technicians of the past generation can view with satisfaction the results of their efforts, whether on the chemical or the engineering side, as is shown by figures given in the present report. Fuel problems are world-wide and, broadly speaking, there is no absolute secrecy about them. Ideas or achievements in one country can be adopted all over the world if those concerned choose—which is not always done. For example, enthusiasts for smoke abatement have never ceased to make their advocacy heard and yet, since women received the vote, they have not used their political power to bring forward the smokeless city.

Experience shows that there may be a considerable lag between the gaining of technical knowledge and its applications. In Great Britain, the tradition of individual liberty may even cause a retardation of technical progress. The coal-producing industry—employed and employers—has not helped. Left by the War of 1914–18 saddled with unremunerative collieries, it passed through a period of strife and even passive resistance to fuel efficiency, which led in one mining town to the prohibition of the use of gas-heated wash boilers in favour of coal—the object of efficiency in domestic heating took second place to the maintenance of sales. That this 'raw coal' mind still exists appears from the report itself, which links a plea for the burning of raw coal in domestic fires with far-reaching plans for chemical researches on coal. The chemical values in coal are likely to reside largely if not mainly in the volatile matter, which ought not to be ruthlessly burnt.

At one time, the cost of liquid fuel in Great Britain fell so far that imported mineral oil began to make serious inroads into the normal provinces of coal. In one large city in a mining area with idle pitworkers, a municipal building planned for oil-fired central heating was erected. The gas industry, dealing in a fuel which is above all mobile, has remained organized on almost parochial lines, while the uncontrolled competition between gas and electricity has allowed a waste of capital in the supply services. In addition, the country passed through a period of economic slump, which promoted conservatism, or rather conservation, of old plant and equipment.

The remarks above give just a few examples to